



WEEKLY CROP UPDATE

UNIVERSITY OF DELAWARE COOPERATIVE EXTENSION

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Vegetable Crops

Vegetable Crop Insects - Joanne Whalen, Extension IPM Specialist; jwhalen@udel.edu

Cole Crops

As soon as plants are set in the field, be sure to sample for cabbage looper and diamondback larvae. A treatment will be needed before larvae move into the hearts of the plants. You should also watch for the first Harlequin bugs in cole crops. In general, most of the "worm" materials are not effective on Harlequin bugs. The pyrethroids have provided control in years past.

Lima Beans

As soon as pin pods are present, be sure to watch carefully for plant bug and stink bug adults and nymphs. As a general guideline, treatment should be considered if you find 15 adults and/or nymphs per 50 sweeps. Also be sure to begin sampling the earliest planted fields for corn earworm. A treatment will be needed for corn earworm if you find one corn earworm larvae per 6 foot-of-row.

Peppers

Depending on local trap catches, sprays should be applied on a 7 to 10-day schedule once pepper fruit is $\frac{1}{4}$ - $\frac{1}{2}$ inch in diameter. Be sure to check local moth catches in your area by calling the Crop Pest Hotline (302-831-8851) or visit our website at <http://agdev.anr.udel.edu/trap/trap.php>. You will also need to consider a treatment for pepper maggot. Be sure to also watch carefully

for beet armyworm larvae since they can quickly defoliate plants. In addition, be sure to use a material that provides beet armyworm control - the pyrethroids have not provided control of this insect in past years.

Snap Beans

You will need to consider a treatment for corn borer and corn earworm populations in processing and fresh market snap beans. Sprays are needed at the bud and pin stages on processing beans for corn borer control. As earworm trap catches increase, an earworm spray may also be needed at the pin stage. You will need to check our website (<http://agdev.anr.udel.edu/trap/trap.php>) or call the Crop Pest Hotline (302-831-8851) for the most recent trap catches to help decide on the spray interval between the pin stage and harvest for processing snap beans. <http://extension.udel.edu/ag/insect-management/insect-trapping-program/ecb-and-cew-moth-catch-thresholds-for-processing-snap-beans/>

Once pin pods are present on fresh market snap beans, a 7 to 10-day schedule should be maintained for corn borer and corn earworm control.

Sweet Corn

Continue to sample all fields through pre-tassel stage for whorl feeders. A treatment should be applied if 12- 15% of the plants are infested with larvae, regardless of the species. The predominant whorl feeder continues to be the fall armyworm. Since fall armyworm (FAW) feed

deep in the whorls, sprays should be directed into the whorls and multiple applications are often needed to achieve control. FAW can also be a problem in silk stage sweet corn, especially in outbreak years. The first silk sprays will be needed as soon as ear shanks are visible. Be sure to check both blacklight and pheromone trap catches since the spray schedules can quickly change. Trap catches are generally updated on Tuesday and Friday mornings on our website (<http://agdev.anr.udel.edu/trap/trap.php>) and the Crop Pest Hotline (302-831-8851). Information on scouting sweet corn and how to use the trap catch information can be found at <http://extension.udel.edu/ag/insect-management/insect-trapping-program/action-thresholds-for-silk-stage-sweet-corn/>. You should also continue to watch for aphids and apply sprays before populations explode. Be sure to refer to the commercial production recommendations for materials labeled on sweet corn for aphid control.

<http://extension.udel.edu/ag/vegetable-fruit-resources/commercial-vegetable-production-recommendations/>

Estimating Seedless Watermelon Yields - Gordon Johnson, Extension Vegetable & Fruit Specialist; gcjohn@udel.edu

Often it is necessary to evaluate seedless watermelon fields to estimate potential yield or remaining yield. While simple in theory it is often difficult in practice, due to the fact that watermelon fruits are sometimes hidden under the foliage or vines. With that in mind, the following are guidelines on how to get a yield estimate from a watermelon field.

1. Flag out plants in a row representing 1/200 of an acre. The table below gives the number plants to flag out (seedless only, no pollenizers).

Between Row Spacing (ft)	In Row Spacing (ft)	Number of Plants to Sample
6	2.5	15
6	3	12
6	3.5	10
6	4	9

6.5	2.5	13
6.5	3	11
6.5	3.5	10
6.5	4	8
7	2.5	12
7	3	10
7	3.5	9
7	4	8
7.5	2.5	12
7.5	3	10
7.5	3.5	8
7.5	4	7
8	2.5	11
8	3	9
8	3.5	8
8	4	7

2. Count the number of harvestable watermelons from those plants. This requires that you trace watermelons to the plant. As an alternative you can count the number of watermelons found on the plastic bed and in one row middle next to the bed where the plants have been flagged out.

3. Weigh 10 watermelons and get an average weight per watermelon

4. Multiply the average weight per watermelon x the number of watermelons plants flagged x 200 to get estimated yield per acre. Note: this is planted area and not field area - drive rows must be subtracted to get yield per whole field acre.

5. Repeat this process at for each 4 acres planted (for a 40 acre field do 10 sample areas) and then average all weights to get the estimated yield. Include one edge row for each 3 to 4 middle rows sampled.

Fruit Crops

Site Selection for Fruit Plantings - Gordon Johnson, Extension Vegetable & Fruit Specialist; gcjohn@udel.edu

There has been an increase in interest in planting fruits in Delaware. This is a positive trend that matches the interest in buying local

and can also provide local fruit to the steady influx of visitors in the region.

Success with tree fruits, blueberries, grapes, brambles, and other long-term perennial fruits begins with selecting a proper site. I have visited too many sites in the past 10 years where growers have lost expensive planting material because of poor locations and poor planning. Landowners most often are not buying properties with fruit planting in mind and many properties just are not suitable for fruit.

The most common issue with planting fruit is that of high seasonal water tables. When water rises in winter, it can saturate part of the root zone of the fruit plant and roots will then die due to lack of oxygen. Roots injured by waterlogging are also then more susceptible to root rot pathogens. Fruit plants with water damaged roots also have fewer effective roots which can make them more susceptible to other plant stresses such as drought. In the end, these fruit plants will die prematurely, have shorter life spans or will be less productive.

The best time to evaluate a site for the height of the seasonal water table is in late winter. Find the lowest elevation in the property being evaluated and dig a hole 6 feet deep using a posthole digger. If any free water is found in the hole then the site is not suitable for most deep rooted perennial fruits such as tree fruits and grapes. With brambles and blueberries water should not be found within 4-5 feet of the surface in these observation holes. Also examine the soil that comes out of the borings. If you see considerable amount of gray colored soil, this is an indication of water saturation. Do these borings throughout the property and map your site and avoid planting fruits on any areas with high water tables.

Another problem with water saturation and roots can be perched water tables. This is when an impervious soil layer does not allow water to drain and a saturated area develops above that layer. If perched water tables are found, the area is again not ideally suited for fruits. Subsoiling can fracture these layers if done properly but the layers may reform in a few years.

In high water table soils, it may be possible to grow some fruits such as brambles or blueberries by creating high mounds to grow on. In this case, the growing area is elevated 2-4 feet by moving soil to create a mounded ridge where fruit is planted. While this is possible, it is expensive and must be done in such a way that water does not collect between the mounds.

Another issue with fruit siting is air drainage. Our last 2 winters have had sub-zero conditions which can cause problems with winter kill in some grapes and brambles and bud damage in some tree fruits. Lower areas where cold air drains to also are more susceptible to late frost damage to flowers in the spring, particularly in peaches, nectarines, apricots, and plums. All sites should be evaluated for air drainage by doing elevations on the property. Fruit should be planted on the highest elevations and frost pockets should be avoided. Frost pockets are easily seen by looking where frost is found during late spring frost events. On Delmarva, an issue we have is that some areas are just completely flat, with low elevation. These areas will not allow for air to drain and can also have issues with cold air accumulating.

Soil pH is an issue with blueberry establishment. Blueberries require a soil pH of 4.5-4.8. Most of our soils have much higher pHs and the soil must be acidified before blueberries can be planted. This can take 1-2 years using sulfur as the acidifying agent.

Sites should also be evaluated for nematodes, soil pests that can be damaging to fruit roots, before planting.

Agronomic Crops

Agronomic Crop Insects - Joanne Whalen, Extension IPM Specialist; jwhalen@udel.edu

Alfalfa and Grass Hay Crops

Be sure to watch for defoliators in grass hay crops and alfalfa. Significant damage can occur in grass hay fields from true armyworm and fall armyworm. It is important to catch populations before significant damage has occurred and when larvae are small. In addition to checking labels for rates, be sure to check for all restrictions including, but not limited to,

comments on control under high populations and size of larvae; days to harvest and forage/silage restrictions. No thresholds are available; however, controls should be applied before significant defoliation occurs.

Field Corn

In the past couple of years, we have received calls about aphids in field corn by mid-August. In most cases, populations have been spotty within fields or are only found on field edges. Currently, there are no treatment thresholds for aphids in corn past tasseling. In many cases, fields have been beyond the point of considering a treatment due to the maturity of the crop and the presence of beneficial insects and/or parasitized and diseased aphids.

Although we have no thresholds for aphids in corn in our area, here are some considerations developed by entomologist in the Midwest that can help to make a treatment decision:

1. Are 80 percent of the plants infested with aphids?
2. Do most of the ears have aphids? What about the ear leaf and above?
3. How long has the field been infested and is the density increasing?
4. Do you see honeydew or sooty mold on the stalk, leaves or ear?
5. Are you seeing winged aphids or nymphs with wing pads? That may be a sign of migration out of the field.
6. Is the field under drought stress?
7. Do you see any bloated, off-color aphids? Natural fungi can quickly wipe out aphids. In addition are beneficial insects/parasitized aphids present.
8. What is the corn growth stage? Fields reaching hard dent should be past the point of justifying a treatment.
9. Some insecticides have a long pre-harvest interval so be sure to check the label.

Soybeans

We continue to find low levels of defoliators (Japanese beetles, grasshoppers, silver spotted skipper, green cloverworm and isolated spots of fall armyworm and yellow striped armyworm) in both full season and double crop soybeans. As a general guideline, treatment decisions for defoliators should be based on the following defoliation thresholds:

- (a) Full Season Plantings - 30% defoliation pre-bloom; 15% defoliation from bloom through the end of pod fill; 35% - once fully developed seeds are present
- (b) Double Crop Plantings (especially if growth is poor) - 20% defoliation pre-bloom, 10% defoliation from bloom through pod fill; 15% defoliation - once fully developed seeds are present.

Another defoliator that is showing up earlier in states to our south is the soybean looper. This insect is a migratory pest and in past years we have seen it cause significant defoliation in outbreak years. It is often a problem in dry years. Since resistance to pyrethroids has been documented in states to our south, a non-pyrethroid option will need to be selected if they become a problem. We also have other looper species in our fields so proper identification is important. The following link from Virginia includes pictures to help with identification

<http://blogs.ext.vt.edu/ag-pest-advisory/soybean-loopers-are-infesting-soybeans-in-north-carolina/>.

In drought stressed areas of the state, we can find spider mites on field edges and within fields. Be sure to watch for hot spots of activity in field interiors. Early detection and control is needed for spider mite management.

Continue to watch for an increase in stink bug populations. Economic damage from stink bugs is most likely to occur during the pod development and pod fill stages. Brown Marmorated stink bug populations still remain extremely low and are only being found along field edges that border woods in New Castle County.

We continue to survey for Kudzu Bug but have not found any in soybeans or kudzu. In Virginia, kudzu bugs have been found in soybean fields in 21 southern/eastern counties but in all cases, these have been adults only, and at very low numbers (http://blogs.ext.vt.edu/ag-pest-advisory/files/2015/07/KB_map_30_July_2015.pdf). Be sure to scout soybeans for this insect and follow the Kudzu Bug website - www.kudzubug.org -- for identification and treatment information. The treatment threshold is still one nymph per sweep.

We have also started to find an occasional soybean aphid in a few fields throughout the state. Cooler weather patterns favor an increase in populations. The economic threshold for soybean aphid established in the Midwest is 250 aphids per plant. Populations should be increasing and most of the plants should be infested (>80 percent) in order to justify an application. This threshold is appropriate until plants reach mid-seed set (R5.5). Spraying at full seed set (R6) has not produced a consistent yield response in the Mid-west. You should also consider beneficial insect activity before making a treatment decision. Most products labeled for soybean aphid will provide effective control

As far as corn earworm, we continue to find low levels of small larvae, mainly in double crop fields. The results of the annual corn earworm survey in field corn in Virginia, which has been used as an indicator of the potential for corn earworm in soybeans, indicates that statewide, approximately 17.5% of ears were infested with corn earworm. This is even lower than the numbers reported in 2014 (20%) and 2013 (18%) (http://blogs.ext.vt.edu/ag-pest-advisory/files/2015/07/CEW_survey_2015.pdf). **However, our trap catches just spiked this past week, especially our pheromone trap catches, so it will be important to scout all fields for earworms in the next week to 10 days.** In making a treatment decision, the use of the Corn Earworm Calculator - developed in VA and NC (<http://www.ipm.vt.edu/cew/>) will provide the best decision making information since it estimates a threshold based on the actual treatment cost and bushel value you enter.

Webcast on Soybean Vein Necrosis Virus - Nathan Kleczewski, Extension Specialist - Plant Pathology; nkleczew@udel.edu

Soybean Vein Necrosis Virus is a relatively new virus on soybeans. Over the last two years, we have been conducting surveys in Delaware for this virus and have been collaborating with other plant pathologists to better understand the impacts of this virus on soybean productivity and quality. Damon Smith, my counterpart from Wisconsin, recently published a nice webcast on the Plant Management Network on some of our recent results. Follow this link (or enter into your browser) to access the video. <http://www.plantmanagementnetwork.org/edcenter/seminars/soybean/SoybeanVeinNecrosisViruses/>

I also encourage you to sign up for a PMN account. PMN offers great plant pathology applied research updates, tutorials, and other materials valuable to growers, scouts, and industry professionals.

Ear Rots in Corn - Nathan Kleczewski, Extension Specialist - Plant Pathology; nkleczew@udel.edu

Over the last two weeks we have started to hear about problems with ear rots in some fields, in particular Diplodia and Fusarium ear rot. Ear rots can be caused by a number of different fungi, and can impact grain quality and yield. Another potential issue resulting from some ear rots is the development of mycotoxins, which can be harmful to livestock and humans if consumed.

In general, ear rots are derived from corn residue on the soil. The diseases tend to infect when we have wet weather from silking to about 2 weeks after the start of silking. Insect damage and delays in planting or slow grain drying or harvest can increase ear rot severity and incidence. The fungi often colonize the silks and then use the silk as a means to enter the developing ear although some (i.e. Diplodia) can also infect husks or the shank. Late season rains can increase ear mold severity and potential impacts on quality. **The best means to manage ear rots is to rotate corn with another crop**

such as soybeans or vegetables, select resistant hybrids (when available), and manage insects. Do not expect a fungicide to have much impact on ear rots. Early harvest and drying to 15% moisture can limit additional fungal growth impacts on grain quality. To scout for ear rots inspect at least 10 ears for every 20

acres of field (minimum of 30 per field) prior to harvest. If you encounter ear rots at significant levels, send a sample to the Diagnostic Clinic to have it properly identified. Table 1 provides you a cheat sheet on some of the more common ear rots in corn.

Table 1. Ear rots commonly encountered in corn.

Disease	Distinctive Symptom	Mycotoxins	Notes
Aspergillus ear rot	Stunting, small ears, powdery olive green growth in between kernels	Aflatoxin (carcinogen and toxin to liver)	Dry areas of field often affected more severely
Cladosporium ear rot	<ul style="list-style-type: none"> • Dark, green/black blotched or streaked kernels. • Scattered throughout ear. Green fuzzy growth between kernels. 	none	Often associated with insect damage
Diplodia ear rot	<ul style="list-style-type: none"> • Straw colored husks, white/grey growth in between kernels • Black pin head structures produced late season on husks kernels, etc. • May cause premature germination. 	none	Disease often progresses from base to tip of ear but entire ear can be affected.
Fusarium ear rot	<ul style="list-style-type: none"> • Kernels show a whitish “starburst” pattern • Sometimes kernels have grey to pink “cap” • Often scattered throughout ear 	Fumonisin	More severe when hot dry weather follows flowering.
Gibberella ear rot	<ul style="list-style-type: none"> • Pink to red mold grows in between kernels. • Typically only impacts part of ear 	Deoxynivalenol (DON) Zearalenone	Often starts at ear tip and works down to the base of the ear
Trichoderma ear rot	<ul style="list-style-type: none"> • White mold that turns green/blue and powdery. • Whole ear affected. 	none	More severe when wet weather precedes harvest. Often associated with mechanical damage to ear.

Residue Impacts on Stagonospora Glume

Blotch in Wheat - Nathan Kleczewski,
Extension Specialist - Plant Pathology;
nkleczew@udel.edu

Wheat season is well behind us and another season is fast approaching. One issue some growers encountered this season was Stagonospora leaf and glume blotch, a common disease of Delaware and Maryland wheat fields. There appears to be a trend of increasing incidence and severity of Stagonospora and other members of the leaf blotch complex (tan spot, Septoria blotch) in many regions where wheat is grown. This is likely a result of increased no-till or minimal-till acres. The use of no-till results in more wheat residue, which is used by the leaf blotch pathogens as an overwintering nutrient source. As a result, there is a greater potential for leaf blotch diseases due to the larger amount of local and regional inoculum.

Although it is likely that residue levels are related to leaf blotch outbreaks, little information exists on the impacts of residue on disease severity and yield. In a recent publication in the journal *Phytopathology*, a group of researchers set out to better understand the role of residue on winter wheat disease severity. Experiments were conducted from 2012-2014 using the wheat varieties Dynagro Shirley and Dynagro 9012. Four to six levels of residue were added to experimental plots. Disease severity was measured over time and yield calculated. What did the researchers find?

Glume blotch severity was associated with increasing residue levels. This was not a big surprise. However, the studies indicated that disease severity increased in a non-linear fashion. In fact, disease increased rapidly with relatively small increases of residue when residue levels were low, but leveled out somewhat when residue levels increased above 20-30% surface coverage. Disease severity ranged from 0-50% but only impacted yield at two sites. These results indicate that reducing residue can significantly reduce the impacts of *Stagonospora glume blotch*, but in order to see real benefits residue needs to be reduced below 30% coverage of the soil surface.

Reference

Mehra, L.K, C. Cowger, R. Weisz, and P. Ojambo, 2015. Quantifying the effects of wheat residue on severity of *Stagonospora nodorum* blotch and yield in winter wheat. *Phytopathology*:
<http://dx.doi.org/10.1094/PHYTO-03-15-0080-R>

Announcements

Poultry Grower's Disease Control Workshop: Keeping Disease Off of the Poultry Farm

Wednesday, September 30, 2015

If you missed the first workshop on June 11th, the same program will be presented on September 30 at the following times and locations:

10:00 a.m. – 12:00 noon

VFW Worcester Post 93

2017 Bypass Rd., Pocomoke City, MD

2:00 p.m. – 4:00 p.m.

Bridgeville Fire Hall

311 Market St., Bridgeville, DE

6:00 p.m. – 8:00 p.m.

Ruthsburg Community Club

105 Damsontown Rd., Queen Anne, MD

TOPICS INCLUDE:

Avian Influenza Outbreaks in Commercial Poultry in the U.S.

Dr. David Shapiro, *Veterinarian, Perdue Farms*

Practical Biosecurity Best Management Practices for Broiler Growers

Dr. Jon Moyle, *Extension Specialist, University of Maryland Extension*

Ms. Jenny Rhodes, *Ag Extension Educator, University of Maryland Extension*

Mr. Bill Brown, *Poultry Extension Agent, University of Delaware Cooperative Extension*

Avian Flu Response and Control Plan on Delmarva

Dr. Don Ritter, *Veterinarian, Mountaire Farms*

REGISTRATION DEADLINE is September 25, 2015

Please register online by visiting:
<http://ag.udel.edu/rec/>. When registering, please be

sure to choose the location of the workshop you would like to attend.

For more information, please contact Lisa Collins at lcollins@udel.edu or call (302) 856-2585 x702

This event is hosted by University of Delaware Cooperative Extension and University of Maryland Extension, in cooperation with Delmarva Poultry Industry, Inc., Delaware Department of Agriculture and Maryland Department of Agriculture.

Weather Summary	
Carvel Research and Education Center Georgetown, DE	
Week of July 30 to August 5, 2015	
Readings Taken from Midnight to Midnight	
Rainfall:	
1.17 inch:	July 30
0.03 inch:	July 31
0.03 inch:	August 1
0.03 inch:	August 4
0.03 inch:	August 5
Air Temperature:	
Highs ranged from 91°F on August 4 to 88°F on August 5.	
Lows ranged from 74°F on August 30 to 65°F on August 3.	
Soil Temperature:	
81.2°F average	
Additional Delaware weather data is available at http://www.deos.udel.edu/monthly_retrieval.html and http://www.rec.udel.edu/TopLevel/Weather.htm	

Weekly Crop Update is compiled and edited by Emmalea Ernest, Associate Scientist - Vegetable Crops

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